

XX.—On the *Animal of Rotella*, Lamk. By J. E. GRAY, Ph.D., F.R.S., V.P.Z.S. &c.

THIS animal has great affinity with that of the *Trochidæ*, but differs so widely in some important particulars that it appears worthy of a separate description, more especially as the figures of the animal of this genus given by Quoy and Gaimard (Voy. Astrolabe = Gray Mollusca, t. 38. f. 7, 8, and by Kiener, Conch. t. 1 = Gray Mollusca, t. 107. f. 6) do not properly represent the animal: both must evidently have been taken from a species of *Trochus*.

The foot is truncated in front, and when contracted in spirits has a deep central groove, and the side edges folded down in front. The lateral fringe is distinct, with three tentacles on each side; on the front of the right side near the base of the tentacles it is produced into an oblong fleshy lobe, which probably partly covers the base of the shell when the animal is exposed, and may deposit the peculiar callosity over the axis which characterizes the genus. The upper part of the body has a deep groove on each side separating it from the rest of the body. The tentacles two, subulate, with a black longitudinal central line; the right tentacle is largest and free, with an oblong compressed lobe on its hinder side, which has an indistinct indication of an eye on the inner part of its upper edge; hence I am inclined to consider it as a modified eye-pedicel. The left tentacle is smaller and partly attached to the upper side of the left eye-pedicel, which is cylindrical, bearing a very distinct eye, and with a large membranaceous expansion attached to the whole length of its left side, which is fringed with small black beards or tentacles on its edge; this expansion is folded first over the mouth towards the right tentacle, and then folded back to the left side of the head and continued by a slightly elevated ridge to the front edge of the left lateral fringe, being a modification of the appendages near the base of the tentacles found in other *Trochidæ*. There is no muzzle, as in the animal of that family, but a small circular sunken hole under the base of the fringe veil emitting a short cylindrical retractile proboscis, armed with an elongated linear lingual membrane. The teeth, as figured by Lovèn, are, as in the *Trochidæ*, placed in many oblique ridges on each side of the lingual membrane; they are subulate, suddenly bent at the end, and finely denticulated near the tip; the innermost series is compressed and suddenly dilated from just under the bend. The operculum is orbicular, horny, thin, of many gradually enlarging whorls, finely ciliated on the outer edge, and rather concave externally.

Since I examined the animal and made the above description,

I have received the May number of the 'Annals of the Lyceum of New York' (vi. 35), containing a figure and description of the animal of *Rotella* made by the Rev. S. B. Fairbank of Bombay, and transmitted by him to the late Professor C. B. Adams.

Mr. Fairbank describes the lobe on the right side of the body, which is an extension of the front end of the lateral fringe, as a lobe probably "of the mantle which partly clings to the shell, but does not at all envelope it;" and he calls the veil "a siphon," and describes it "as a tube, the side being slit next the outer lip of the shell and filled with cilia; the cilia are tipped with black; sometimes they gather against the sides, so that you see the tube with a black rim, but usually they are disposed much as I have dotted them in the figure," that is to say, like the rays of a star. The lateral fringe, so constant in all the *Trochidæ*, is entirely overlooked in this figure and description. He observes that these shells are found where the water would leave them dry at least two hours each tide, just buried in the sand; when placed in water, they did not move about much, but only raised their siphons. As represented in the figure, the "siphon" greatly resembles the fringed siphonal tube of a bivalve shell; but I can scarcely conceive that the veil, as I observed it in the animal in spirit, could form such a complete tube. The part here called a siphon can only be considered as a great development of one of the fringed lobes which are found near the base of the tentacles of most *Trochidæ* and *Turbonidæ*, and which is a continuation over the head of the lateral membranes of these animals. It differs chiefly from the other *Trochidæ* in the rostrum not being developed, and the mouth consisting of a round opening under the base of the veil, and in the peculiar development of the frontal appendages.

XXI.—On the Phosphorescence of some Marine Invertebrata.

By M. A. DE QUATREFAGES*.

[Concluded from p. 27.]

SECOND PART.—General Observations on Phosphorescence.

1. *Description of the Phenomenon.*—It would be useless to repeat here all the details given by travellers; I will confine myself to some remarks on my own observations.

The phosphorescence of the sea has appeared to me under two different forms:—1st, a result of scintillations more or less nu-

* From the *Annales des Sciences Naturelles*, vol. liv. 3rd series, as inserted in Silliman's *American Journal of Science* for July, 1853.